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(54) TELEPHONE SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To simply register a melody registered in other telephone system in a telephone system where a desired melody can be registered for an incoming call tone or the like. *
SOLUTION: In a portable telephone set that is provided with a melody data storage section 14 which stores melody data received via an operation section 2 and that uses the melody data for an incoming tone or the like, when a transmission command is received from the operation section 2 during a speech, an encoder 10a converts the melody data in the storage section 14 into a DTMF signal and a transmission reception section 12 sends the signal. Upon receipt of a reception command from the operation section 2, a decoder 10 decodes the melody data from the received DTMF signal and stores the decoded melody data to the melody data storage section 14. Thus, the melody data are able to be served to the telephone set being a called destination and the melody data are also served from the telephone set being the called destination and the registration of the melody data to the melody data storage section 14 is very simply conducted.

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CLAIMS

[Claim(s)]

[Claim 1] The data input means for inputting the melody data which encoded the melody of arbitration for every sound, In telephone equipment usable as a melody for guidance of operation which contains a ringer tone for the melody data which were equipped with a storage means to memorize the melody data inputted from this data input means, and were memorized by this storage means When the telephone equipment concerned is connected to other telephone equipments through the telephone network, The transmitting command input means for inputting the transmitting command which the melody data memorized by said storage means are made to transmit to other telephone equipments, If a transmitting command is inputted from this transmitting command input means, melody data will be read from said storage means, the sending signal which consists these melody data of a DTMF signal -- changing -- this sending signal -- said telephone network -- minding -- said -- others -- the telephone equipment characterized by having a melody data transmitting means to transmit to telephone equipment.

[Claim 2] The data input means for inputting the melody data which encoded the melody of arbitration for every sound, In telephone equipment usable as a melody for guidance of operation which contains a ringer tone for the melody data which were equipped with a storage means to memorize the melody data inputted from this data input means, and were memorized by this storage means When the telephone equipment concerned is connected to other telephone equipments through the telephone network, The reception command input means for inputting the reception command which makes the melody data transmitted from these other telephone equipments receive, If a reception command is inputted from this reception command input means, while receiving after that the DTMF signal transmitted from other telephone equipments through said telephone network Telephone equipment characterized by having a melody data receiving means to change the received this DTMF signal into melody data, and to store in said storage means.

[Claim 3] If a transmitting command is inputted from said transmitting command input means, said melody data transmitting means Transmit and receive the signal transmission which changed the predetermined code into the DTMF signal between telephone equipment besides the above. If it has a ready-for-sending ability decision means to judge whether transmission of melody data is possible and it is judged with this ready-for-sending ability decision means that transmission of melody data is possible Telephone equipment according to claim 1 which will be characterized by reporting that to a user if it is judged that transmission of said melody data is started and transmission of melody data cannot be performed with this ready-for-sending ability decision means.

[Claim 4] If a reception command is inputted from said reception command input means, said melody data receiving means Transmit and receive the signal transmission which changed the predetermined code into the DTMF signal between telephone equipment besides the above. If it has a ready-for-receiving ability decision means to judge whether reception of melody data is possible and it is judged with this ready-for-receiving ability decision means that reception of melody data is possible Telephone equipment according to claim 2 which will be characterized by reporting that to a user if it is judged that

reception of said melody data is started and reception of melody data cannot be performed with this ready-for-receiving ability decision means.

[Claim 5] If reception of said melody data completes said melody data receiving means If it has an abnormality judging means in data to judge whether these melody data are normal and it is judged with this abnormality judging means in data that melody data are normal Telephone equipment according to claim 2 or 4 which will be characterized by reporting that to a user if these melody data are stored in said storage means and melody data are judged to be unusual with this abnormality judging means in data.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the telephone equipment which can register the melody of the arbitration which the user inputted as a sound for guidance of a ringer tone, an alarm sound, etc. of operation.

[0002]

[Description of the Prior Art] The telephone equipment constituted so that the melody of the arbitration which the user composed could be conventionally registered as a sound for guidance of a ringer tone, an alarm sound, etc. of operation is known. However, this kind of telephone equipment is constituted so that a melody input may be performed by manual operation, and it had to input in order the scale of the sound which constitutes a melody, the length, etc. for every sound at the time of a melody input.

[0003] For this reason, in the former, even if it was a case so that the melody registered into a certain telephone equipment may be registered into other telephone equipments for example, the same procedure had to perform the melody input from the beginning, and there was a problem that the input of a melody took time and effort. This invention was made in view of such a problem, and aims at enabling it to register simply the melody registered into a certain telephone equipment to other telephone equipments in the telephone equipment with which a user can register a desired melody as a sound for guidance of operation.

[0004]

[Means for Solving the Problem] The telephone equipment according to claim 1 made in order to attain this purpose can be used as a melody for guidance of operation which contains a ringer tone for the melody data with which that melody data was memorized by the storage means, and was memorized by this storage means, if the melody data which encoded the melody of arbitration for every sound from the data input means are inputted. And if the transmitting command of melody data inputs from a transmitting command input means when the telephone equipment concerned is connected to other telephone equipments through a telephone network (under the message with the telephone equipment

which will be others if it puts in another way), it changes to the sending signal to which a melody data transmitting means reads melody data from a storage means and which it becomes from a DTMF signal about this melody data, and it will transmit to other telephone equipments of a message place.

[0005] For this reason, according to telephone equipment according to claim 1, it becomes possible by inputting melody data from a data input means to transmit the melody data registered as a melody for guidance of operation of the telephone equipment of self to other telephone equipments by the DTMF signal.

[0006] It is telephone equipment usable as a melody for guidance of operation about the melody data by on the other hand making a storage means memorize the melody data, when telephone equipment according to claim 2 as well as telephone equipment according to claim 1 inputs melody data from a data input means. And if the reception command of melody data is inputted from a reception command input means with telephone equipment according to claim 2 when the equipment concerned is connected to other telephone equipments through the telephone network (that is, under the message with other telephone equipments) Then, a melody data receiving means receives the DTMF signal transmitted from other telephone equipments through a telephone network, changes this DTMF signal into melody data, and stores in a storage means.

[0007] For this reason, according to telephone equipment according to claim 2, that melody data can be used as a self melody for guidance of operation by memorizing the melody data obtained from the DTMF signal transmitted from the telephone equipment of a message place after a reception command input for a storage means.

[0008] Therefore, if claim 1 and telephone equipment according to claim 2 are used, the melody data registered into one telephone equipment as a melody for guidance of operation can be registered very easily as a melody for guidance of operation of the telephone equipment of another side. And if telephone equipment equipped with claim 1 and the component according to claim 2 is constituted, it will have the transmitting function which transmits the registered melody data, and the reception function to receive and register melody data, and it will become possible to transmit and receive melody data freely during the message with other telephone equipments.

[0009] Moreover, melody data can be transmitted and received, and especially, by this invention (claim 1, claim 2), since a DTMF signal is used for transmission and reception of the melody data using a telephone network, no matter it may be what telephone network, a limit is not received in a telephone network usable to transmission and reception of melody data. That is, DTMF (dual tone multi frequency) Since it consists of combination of two frequencies of a speech frequency band, it is not based on the class of telephone network, but melody data can be transmitted [it is the signal used in push button dial type telephone, and] and received with any telephone networks.

[0010] Next, telephone equipment according to claim 3 is set to equipment according to claim 1. When a transmitting command is inputted into a melody data transmitting means from a transmitting command input means Transmit and receive the signal transmission which changed the predetermined code into the DTMF signal among other telephone equipments which should transmit melody data. A ready-for-sending ability decision means to judge whether transmission of melody data is possible is established. If it is judged with this ready-for-sending ability decision means that transmission of melody data is possible, transmission of melody data will be started, and that is reported to judge that transmission of melody data cannot be performed with a ready-for-sending ability decision means to a user.

[0011] For this reason, according to telephone equipment according to claim 3, when the telephone equipment of a message place is not in the condition that melody data are receivable, it can prevent starting transmission of melody data and, moreover, that can be reported to a user. Therefore, a user can direct that the mode of operation of telephone equipment switches to the receive mode which receives melody data by message to the user of the telephone equipment of a message place, when the telephone equipment of a message place is not in the condition that melody data are receivable.

[0012] On the other hand, telephone equipment according to claim 4 is set to equipment according to claim 2. When a reception command is inputted into a melody data receiving means from a reception command input means Transmit and receive the signal transmission which changed the predetermined

code into the DTMF signal between the telephone equipment under message. A ready-for-receiving ability decision means to judge whether reception of melody data is possible is established. If it is judged with this ready-for-receiving ability decision means that reception of melody data is possible, reception of melody data will be started, and that is reported to judge that reception of melody data cannot be performed with a ready-for-receiving ability decision means to a user.

[0013] For this reason, according to telephone equipment according to claim 4, when the telephone equipment of a message place is not in the condition that melody data can be transmitted, telephone equipment can prevent starting reception actuation of melody data, and, moreover, that can be reported to a user. Therefore, a user can direct that the mode of operation of telephone equipment switches to the transmitting mode which transmits melody data by message to the user of the telephone equipment of a message place, when the telephone equipment of a message place is not in the condition that melody data can be transmitted.

[0014] Moreover, telephone equipment according to claim 5 is set to telephone equipment according to claim 2 or 4. If reception of melody data is completed for a melody data receiving means, an abnormality judging means in data to judge whether the data is normal will be established. If it is judged with this abnormality judging means in data that melody data are normal, melody data are stored in a storage means, and that is reported to judge melody data to be unusual with the abnormality judging means in data to a user.

[0015] For this reason, when abnormalities are in the received melody data according to telephone equipment according to claim 5, it can prevent registering with a storage means by making that abnormality data into the melody for guidance of operation, and that can be reported to a user. Therefore, it becomes possible to request retransmission of message of melody data by message to the user of the telephone equipment of a message place, and to obtain normal melody data, when a user's received melody data are unusual.

[0016] In addition, when melody data are normally receivable, you may make it transmit the data showing that to the telephone equipment of a message place by the DTMF signal in telephone equipment according to claim 5. And if it does in this way, the telephone equipment side which has transmitted melody data can also judge whether melody data were able to be transmitted normally. That is, if it does in this way, it will become possible to judge whether melody data have been transmitted and received normally, to be able to report a communication link result to a user, and to perform transmission and reception of melody data more certainly by each telephone equipment side which transmitted and received melody data.

[0017]

[Embodiment of the Invention] One example of this invention is explained with a drawing below.

Drawing 1 is a block diagram showing the circuitry of the cell phone unit 1 of an example with which this invention was applied, and drawing 2 is the external view which looked at the cell phone unit 1 from the control unit side.

[0018] As shown in drawing 2, like the common cell phone unit, single hand, it has the cell phone unit 1 of this example, and it can be operated, and it is formed in the shape of a long picture so that conveniently [carrying]. And in the center, as a control unit 2, the ten key of "0-9, *, #" for inputting the telephone number of a call place and the mode of operation of a cell phone unit 1 are switched, or many key switches which consist of various function keys for inputting various commands are arranged. Under this control unit 2, the microphone 5 for a user to input voice at the time of a message is formed. Moreover, above a control unit 2 The display 3 which consists of a liquid crystal display (LCD) for displaying the message transmitted from other telephone equipments, actuation guidance of a cell phone unit 1, a situation of operation, etc. is formed. Furthermore, the loudspeaker 4 for reproducing the sound signal which applies a lug and is sent by a telephone network and the message partner at the time of a message is formed in the upper part. Moreover, the rod antenna 6 formed in the upper point possible [telescopic motion] is formed from this loudspeaker 4, and it is made to be possible [radio] between the base stations by the side of a telephone network through this rod antenna 6.

[0019] In addition, the various keys which constitute a control unit 2 function as the data input means of

this invention, a transmitting command input means, and a reception command input means. And in drawing 2, although the notation for a telephone number input is given to the ten key, a ten key inputs the scale called "DO, RE, and MI --" at the time of the below-mentioned melody input, or is used also for inputting the title of a melody.

[0020] On the other hand, as shown in drawing 1, independently [the loudspeaker 4 for a message], when the call signal has been transmitted to the cell phone unit 1 from the telephone network, a ringer tone is generated in it, or other guidance sounds are generated in it, and the loudspeaker 8 for calling a user is built in it. Moreover, in a cell phone unit 1, memorize melody data usable as the transceiver section 12, ringer tone, and alarm sound for performing radio between base stations through an antenna 6. It connects with the interface section (henceforth the I/F section) 18 and each part of the above for outputting and inputting data among external devices, such as the melody data storage section 14 as a storage means, and a computer, and the control section 10 for performing various control processings is also formed.

[0021] As opposed to the various control processings for the control section 10 being constituted centering on the microcomputer which consists of CPU, a ROM, RAM, etc., and realizing the function as a common cell phone unit, i.e., the transceiver section 12 to a telephone network. The reception which generates a ringer tone from a loudspeaker 8 when the call signal has been transmitted from the call origination processing to which the call origination signal for calling other telephone equipments is made to transmit, and a base station, When the command to which a user connects a cell phone unit 1 to a telephone network according to generating of a ringer tone is inputted. The connection processing to which the equipment 1 concerned is connected to a telephone network through the transceiver section 12, The time of the telephone equipment of a call place being connected to a telephone network by call origination processing, and the message with the telephone equipment by the side of the call-in person being attained, When the equipment 1 concerned is connected to a telephone network by connection processing and the message with the telephone equipment by the side of call origination is attained. A user transmits the sound signal inputted from the microphone 5 to a base station side from the transceiver section 12, or performs voice-input/output processing which generates voice from a loudspeaker 4 with the sound signal transmitted from the telephone equipment of a message place connected through the telephone network.

[0022] Moreover, if the creation command of a melody is inputted when a user operates a control unit 2, after that, a control section 10 will create melody data according to the command which a user inputs through a control unit 2, and will perform melody data origination processing in which the melody data after creation are stored in the melody data storage section 14. Moreover, when the equipment 1 concerned is connected to other telephone equipments through the telephone network (that is, under a message), and a user operates a control unit 2, a control section 10 If the transmitting command which transmits the melody data of the arbitration in the melody data storage section 14 to a message place is inputted. The melody transmitting processing transmitted to the telephone equipment of a message place from the transceiver section 6, while [same] the equipment 1 concerned is telephoning to other telephone equipments, when it changes the specified melody data into a DTMF signal, and a user operates a control unit 2. If the input signal of the melody data transmitted by the DTMF signal from the telephone equipment of a message place is inputted, after that, melody data will be restored from the DTMF signal inputted from the transceiver section 6, and melody reception which stores this in the melody data storage section 14 will also be performed.

[0023] Melody data origination processing in which melody data are hereafter registered into the melody data storage section 14 among the various control processings performed in a control section 10 in this way, melody transmitting processing in which melody data are transmitted to a message place, and the melody reception that receives the melody data transmitted from a message place are explained. In addition, in order to transmit and receive melody data by the DTMF signal, decoder 10b which restores melody data is built in the control section 10 from encoder 10a which changes melody data into the DTMF signal for transmission, and the received DTMF signal.

[0024] Drawing 3 is a flow chart showing melody data origination processing first. As for this

processing, a user operates the key for a selection of function prepared in the control unit 2. If it is the processing performed when the mode of operation of the equipment 1 concerned is set as melody creation mode and processing is started in S110 (S expresses a step), a user operates the ten key (a ten key functions as a data input means at this time) of a control unit 2 first. Melody input process which receives inputting the scale data showing scales or pauses, such as "DO, RE, and MI --", and the die-length data showing the die length (time amount) in order for each [which constitutes a desired melody] sound of every is performed. And in S120 continuing, if it judges whether the user operated the definite key of a control unit 2, and inputted the termination command of a melody input and the termination command is not inputted, a user waits to end a melody input by shifting to S110 again. [0025] Next, if it is judged that the termination command of a melody input was inputted in S120, when it shifts to S130 and a user operates the ten key of a control unit 2 shortly, it will receive inputting the character string showing the titles (music name etc.) of the melody inputted previously. And in S140 continuing, if it judges whether the user operated the definite key of a control unit 2, and inputted the termination command of a title input and the termination command is not inputted, a user waits to end a title by shifting to S130 again.

[0026] In addition, the image which expresses the guidance for the input, the scale which the user inputted, its die length, a character string, etc. during activation of the melody input process of S110 and the character string input process of S130 is displayed on a display 3. Next, if it is judged that the termination command of a character string input was inputted in S140, it shifts to S150 shortly, and while carrying out predetermined time progress, a user will operate the registration key of a control unit 2, and will judge whether the registration command of the melody inputted by S110 was inputted. And between predetermined time, if the processing concerned is ended as it is, the registration command of a melody is not inputted and the registration command of a melody is inputted while carrying out predetermined time progress, it will shift to S160 and the melody data received by S110 will be registered into the melody data storage section 14 with the title data received by S130.

[0027] In addition, the melody data registered into the melody data storage section 14 For example, the note information which consists of die-length data showing the scale data which expresses the scale of each sound or pause which constitutes a melody as shown in drawing 6 (b), and its die length (time amount), Consisting of data lengths showing the number of notes given to the head as a header, title data consist of data lengths showing the character code which constitutes the character string of a title, and the number of alphabetic characters.

[0028] And the melody data registered into the melody data storage section 14 in this way If a user operates a control unit 2 and sets up as a ringer tone, it will be used after that as a ringer tone generated from a loudspeaker 8 according to the call signal from a telephone network. If a user operates a control unit 2 and sets up as melodies for guidance of operation, such as an alarm sound, it will be used after that as a guidance sound generated from a loudspeaker 8 at the time of guidance of the equipment 1 concerned of operation.

[0029] Next, drawing 4 is a flow chart showing melody reception. This processing operates the key for a selection of function by which the user was prepared during the message at the control unit 2. If it is the processing performed when it is set as the melody receive mode which receives the melody data to which the mode of operation of the equipment 1 concerned is transmitted from the telephone equipment of a message place and processing is started The preliminary treatment for the melody reception which forbids the voice input from a microphone 5 and the voice output from the loudspeaker for a message in S210 first is performed. And a display 3 is made to indicate the message (for example, "melody reception preparation") to which the equipment 1 concerned expresses the purport which melody reception is preparing with S220 continuing by flashing, and the "start code" which is the transmitting command of melody data is made to transmit to the telephone equipment of a message place from the transceiver section 12 in S230 continuing.

[0030] In addition, in encoder 10a, this "start code" is changed into a DTMF signal, and is outputted to the transceiver section 12. Moreover, in the following explanation, in case the equipment 1 concerned transmits various codes to the telephone equipment of a message place, a code is altogether changed into

a DTMF signal like the melody data mentioned above, and it transmits.

[0031] In this way, if a "start code" is transmitted in S230, it will judge shortly whether the "confirmation-of-receipt code" transmitted when the telephone equipment of a message place will receive a "start code", by the time it carries out predetermined time progress after that was receivable in S240. And if a "confirmation-of-receipt code" is unreceivable, it shifts to S250 and judges whether the count of transmission of the "start code" after starting the processing concerned is below a count of predetermined (for example, 3 times), and if the count of transmission is below a count of predetermined, it will shift to S230 again and a "start code" will be transmitted.

[0032] On the other hand, if it is judged that the count of transmission of a "start code" is over the count of predetermined in S250 While displaying the message (for example, "reception NG") showing the purport that it was judged as what cannot perform normally data communication between the telephone equipment of a message place, and shifted to S330, and melody data were not able to be received normally on a display 3 The "reception error sound" showing that is generated from a loudspeaker 8, and the processing concerned is ended. In addition, the equipment 1 concerned serves as the usual mode of operation after termination of this melody reception, and a user comes to be able to do a message between the telephone equipment of a message place.

[0033] Next, when it is judged that the "confirmation-of-receipt code" was receivable in S240, it shifts to S260 and the "transfer initiation demand code" which requires a melody data transfer of the telephone equipment of a message place is made to transmit by the DTMF signal from the transceiver section 12. Although the telephone equipment which received this "transfer initiation demand code" starts transmission of "melody transmit data" according to the below-mentioned melody transmitting processing, if a "transfer initiation demand code" is unreceivable, since it will transmit the "error code" showing that, it judges whether this "error code" was received by S270 continuing. And when it is judged that the "error code" was received in S270, since a "transfer initiation demand code" was not able to be correctly transmitted to the telephone equipment of a message place, it shifts to the above S250.

[0034] Moreover, if it is judged that the "error code" is not received in S270, it will judge whether the "melody transmit data" which the telephone equipment of a message place transmits in S280 was receivable this time. And if the "melody transmit data" is not receivable, it shifts to S270 again, and if it is judged conversely that the "melody transmit data" was receivable, it will shift to S290. In addition, when negative judgment is carried out in both S270 and S280, these judgment processings will be performed repeatedly, but when the repeat of these judgment processings is restricted to below fixed time amount and neither "an error code" nor "melody transmit data" can be received between fixed time amount, an affirmation judging is carried out in S270, and processing shifts to S250.

[0035] Next, in S290, since the "melody transmit data" from the telephone equipment of a message place was receivable, it changes into the flashing display of the message (for example, "under data reception") showing the purport which melody data are receiving from the flashing display of the message which expresses under reception preparation for the message indicator to a display 3. And if transmission of the "melody transmit data" from the telephone equipment of a message place is completed, it judges whether melody reception was completed in S300 continuing and melody reception is not completed If waiting and melody reception are completed, that melody reception is completed by repeating and performing processing of S300 The checksum for the abnormality judging in data contained in "melody transmit data" in S310 continuing is checked, and it judges whether the "melody transmit data" received this time in S320 continuing as a result of the checksum check was normal. And if the "melody transmit data" received in S320 this time is judged to be unusual, in S330, it will report the purport that melody data were not able to be received normally to a user, and will end the processing concerned.

[0036] On the other hand, if the "melody transmit data" received in S320 this time is judged to be normal, it will shift to S340, while displaying the message (for example, "reception O.K.") showing that on a display 3, the "completion sound of reception" showing that is generated from a loudspeaker 8, and the purport that melody data were able to be received normally is reported to a user. And the melody data and title data which are contained in the "melody transmit data" received this time are registered

into the melody data storage section 14, in S360 continuing, the "reception O.K. code" showing the purport that melody data have been registered normally is made to transmit to the telephone equipment of a message place by the DTMF signal from the transceiver section 12, and the processing concerned is ended S350 continuing.

[0037] Next, drawing 5 is a flow chart showing melody transmitting processing. This processing operates the key for a selection of function by which the user was prepared during the message at the control unit 2. If it is the processing performed when it is set as the melody transmitting mode which transmits the specific melody data registered into the melody data storage section 14 to the telephone equipment of a message place in the mode of operation of the equipment concerned and processing is started. The preliminary treatment for melody transmission which forbids the voice input from a microphone 5 and the voice output from the loudspeaker for a message in S410 first is performed. And it judges whether the above-mentioned "start code" which will be transmitted from the telephone equipment of a message place in the transceiver section 12 by the time it carries out predetermined time progress of the message (for example, "melody transmitting preparation") to which the equipment concerned expresses the purport which melody transmission is preparing with S420 continuing after that in S430 which a display 3 is made to indicate by flashing and follows it was received.

[0038] And if it is judged that the "start code" was unreceivable in S430. While displaying the message (for example, "transmission NG") showing the purport that it was judged as what cannot perform data communication normally between the telephone equipment of a message place, and shifted to S510, and melody data were not able to be transmitted normally on a display 3. The "transmitting error sound" showing that is generated from a loudspeaker 8, and the processing concerned is ended. In addition, the equipment 1 concerned serves as the usual mode of operation, and a user comes for after termination of this melody transmitting processing to be able to do [the equipment] a message between the telephone equipment of a message place like the termination back of the above-mentioned melody reception.

[0039] On the other hand, if it is judged that the "start code" was receivable in S430, it will shift to S440 shortly and will change into the flashing display of the message (for example, "under data transmission") showing the purport to which melody data are transmitting the message indicator to a display 3 from the flashing display of the message showing under transmitting preparation. And in S450 continuing, it judges whether the "transfer initiation demand code" transmitted when the telephone equipment of a message place receives a "confirmation-of-receipt code" was receivable until it carries out predetermined time progress after that from the transceiver section 12 in S460 which is made to transmit the above-mentioned "confirmation-of-receipt code" by the DTMF signal to the telephone equipment of a message place, and continues.

[0040] If it is judged that the "transfer initiation demand code" was unreceivable in S460, it will judge whether it shifted to S470 and the "start code" was received again. And when it shifts to S450 again and above-mentioned processing is performed, when a "start code" is received again, and a "start code" is not able to be re-received, it shifts to S480 and the above-mentioned "error code" is made to transmit from the transceiver section 12 by the DTMF signal to the telephone equipment of a message place.

[0041] And when it judges whether the "start code" which the telephone equipment of a message place transmits was received and a "start code" is received by transmission of this "error code" while shifting to S490 and carrying out predetermined time progress after that, after transmission of an "error code" shifts to S450 again, and performs above-mentioned processing.

[0042] Moreover, if it is judged conversely that the "start code" was unreceivable in S490, after shifting to S500 and transmitting an "error code" in S480, it judges whether the count (number of errors) which was not able to receive a "start code" is below a count of predetermined (for example, 3 times). And if this number of errors is below a count of predetermined, it shifts to S480 again, and if the number of errors exceeds the count of predetermined, after reporting the purport that melody data were not able to be normally transmitted in S510 to a user, the processing concerned will be ended conversely.

[0043] If it is judged next again that the "transfer initiation demand code" was receivable in S460. It shifts to S520. At the time of initiation of the processing concerned (at the time of a melody transmitting-mode setup) Read the melody data specified when a user operated a control unit 2 from the

melody data storage section 14, and "melody transmit data" is generated from this melody data. From the transceiver section 12, generation / transmitting processing of "melody transmit data" to which it is made to transmit by the DTMF signal is performed.

[0044] In addition, in this processing, from the melody data which were memorized by the melody data storage section 14 and which should be transmitted, and the title data corresponding to this The checksum for the contents check of data (a melody checksum and title checksum) is created. Each [these] data, i.e., title data, a title checksum, melody data, and a melody checksum, Data as shown in drawing 6 (a) which consists of the total data length of each [these] data are generated as "melody transmit data", and it transmits to the telephone equipment of a message place.

[0045] And if the transmission of "melody transmit data" which carried out [above-mentioned] generation is completed in S520, by the time it will shift to S530 continuing and will carry out predetermined time progress after that When it judges whether the "reception O.K. code" transmitted from the telephone equipment of a message place was receivable and the "reception O.K. code" is able to be received While displaying the message (for example, "transmission O.K.") which expresses with S540 the purport that melody data were able to be transmitted normally on a display 3 Generate the "completion sound of transmitting" showing that from a loudspeaker 8, report the purport that melody data were able to be transmitted normally to a user, and conversely, if it is judged that the "reception O.K. code" was unreceivable in S530 The processing concerned is ended after reporting the purport that melody data were not able to be normally transmitted in S510 to a user.

[0046] If according to the cell phone unit 1 of this example a user operates a control unit 2 and inputs the reception command of melody data during the message with other telephone equipments as explained above Become the melody receive mode and the melody data transmitted from the telephone equipment of a message place are automatically registered into the melody data storage section 14 after that. On the contrary, if a user operates a control unit 2 and inputs the transmitting command of melody data during the message with other telephone equipments It becomes a melody transmitting mode and the predetermined melody data in the melody data storage section 14 specified at the time of the input of a transmitting command of a user are automatically transmitted to the telephone equipment of a message place.

[0047] For this reason, by arranging transmission and reception of melody data and inputting a transmitting command or a reception command by message, among the users of the telephone equipment of a message place, the melody data of self can be offered or a user can register the melody data registered into other telephone equipments to other telephone equipments as melody data of self. Therefore, according to this example, it becomes possible to register very simply registering [with a certain telephone equipment] melody data to other telephone equipments, and the operability at the time of registering melody data as a ringer tone or an alarm sound can be improved.

[0048] moreover, in case melody data are transmitted and received between the telephone equipment of a message place in melody transmitting processing and melody reception according to the cell phone unit 1 of this example By transmitting and receiving a "start code", a "transfer initiation demand code", or an "error code" It checks whether data communication can be normally performed between the telephone equipment of a message place (S230-S280, S430-S500). Only when it is able to check that it can perform, transmission or reception of melody data is performed, and when data communication cannot be performed normally, that is reported to a user (S330, S510), and it is carried out.

[0049] For this reason, according to this example, it becomes possible to transmit and receive melody data correctly between the telephone equipment of a message place. Even if it is a case as the telephone equipment of a message place has not set it as transmission or the receive mode of melody data by a user's failure etc., and the user who received error information By message, since that can be connected to the user of the telephone equipment of a message place, exact transmission and reception of melody data can also be redone promptly, and the operability at the time of melody data transmission and reception can also improve.

[0050] moreover, in the telephone equipment side which received melody data When it judges whether the received data are normal (S310, S320) and there are abnormalities in data Since it is made like

(S330), also when [which reports that to a user] abnormalities are in the data itself, that is reported to a user. Transmission and reception of melody data can be performed again, and transmission and reception of melody data can be performed more certainly, as a result the dependability of equipment can be improved.

[0051] Moreover, especially, by this example, since it is made to perform data communication performed between the telephone equipment of a message place for transmission and reception of melody data altogether using a DTMF signal, there is no limit in the telephone network used for transmission and reception of melody data, and no matter it may be what telephone network, it becomes possible to transmit and receive melody data.

[0052] In addition, in this example, the melody reception shown in drawing 4 functions as a melody data receiving means of this invention, and the melody transmitting processing shown in drawing 5 functions as a melody data transmitting means of this invention. And processing of S230-S280 functions as a ready-for-receiving ability decision means of this invention among the melody receptions especially shown in drawing 4, processing of S310,320 functions as an abnormality judging means in data of this invention, and processing of S430-S500 functions as a ready-for-sending ability decision means of this invention among the melody transmitting processings shown in drawing 5.

[0053] As mentioned above, although one example of this invention was explained, this invention is not limited to the above-mentioned example, and can take various modes. For example, although the above-mentioned example explained the cell phone unit connected by wireless between the base stations of a telephone network, this invention is applicable even if it is telephone equipment by which direct continuation is carried out to a telephone network with a cable.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is a block diagram showing the circuitry of the cell phone unit of an example.

[Drawing 2] It is the external view which looked at the cell phone unit of an example from the control unit side.

[Drawing 3] It is a flow chart showing the melody data generation processing performed in a control section.

[Drawing 4] It is the flow chart with which melody reception is similarly expressed.

[Drawing 5] It is the flow chart with which melody transmitting processing is similarly expressed.

[Drawing 6] It is an explanatory view showing the DS of melody data and melody transmit data.

[Description of Notations]

2 [-- A microphone, 6 / -- An antenna, 8 / -- A loudspeaker (for a call), 10 / -- A control section, 10a / -- An encoder, 10b / -- A decoder, 12 / -- The transceiver section, 14 / -- The melody data storage section, 18 / -- I/F section.] -- A control unit, 3 -- Display .4 -- A loudspeaker (for a message), 5

[Translation done.]

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DRAWINGS

[Drawing 1]

x

[Drawing 2]

x

[Drawing 6]



x]



[Drawing 3]



x]



[Drawing 4]

x

[Drawing 5]

x]

[Translation done.]